

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents
United States Patent and Trademark
Office
Box PCT
Washington, D.C.20231
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing:

08 September 2000 (08.09.00)

International application No.:

PCT/GB00/00774

Applicant's or agent's file reference:

International filing date:

03 March 2000 (03.03.00)

Priority date:

03 March 1999 (03.03.99)

Applicant:

COX, Brian, Anthony

1. The designated Office is hereby notified of its election made:



in the demand filed with the International preliminary Examining Authority on:

23 June 2000 (23.06.00)



in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was



was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer:

J. Zahra

Telephone No.: (41-22) 338.83.38

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 6/SG/12017	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/GB00/00774	International filing date (day/month/year) 03/03/2000	Priority date (day/month/year) 03/03/1999
International Patent Classification (IPC) or national classification and IPC B62J1/08		
Applicant COX, Brian, Anthony		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.


2. This REPORT consists of a total of 5 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand 23/06/2000	Date of completion of this report 22.12.2000
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized officer Denicolai, G Telephone No. +31 70 340 3361



INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB00/00774

I. Basis of the report

1. This report has been drawn on the basis of *(substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments (Rules 70.16 and 70.17).):*

Description, pages:

1-7 as originally filed

Claims, No.:

1-16 as originally filed

Drawings, sheets:

1/9-9/9 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB00/00774

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):
(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims 1-16
	No: Claims
Inventive step (IS)	Yes: Claims 1-16
	No: Claims
Industrial applicability (IA)	Yes: Claims 1-16
	No: Claims

2. Citations and explanations
see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB00/00774

Re Item V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following document/s/:

D1: W0,A,9732774

1) NOVELTY

The seat of claim 1 differs from the seat of D1 in that the seat performs, when the machine is in use, a lateral rocking motion, the effective axis of which is disposed above the upper surface of the seat portion. This is in contrast with the seat of D1 where, as can be seen from the figures and description, the seat rotates around axis (4).

Therefore claim 1 fulfills the requirement of Article 33(2) PCT.

2) INVENTIVE STEP

Although, as mentioned above, D1 discloses a seat having a lateral rocking motion, it does not suggest the axis of rotation of this motion being above the seat portion when in use. This distinguishing features as described above is not disclose in any of the cited documents.

Therefore claim 1 fulfills the requirement of Article 33(3) PCT.

Re Item VII

Certain defects in the international application

- 1) The features of the claim/s are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).
- 2) Independent claim 1 is not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art (document D1) being placed in the preamble (Rule 6.3(b)(I) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).
- 3) Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the document D1 is not mentioned in the description, nor is this document identified therein.

Re Item VIII

Certain observations on the international application

- 1) As specified in claim 4, in claim 1 should be made clear the fact that the seat performs a lateral rocking motion having the effective axis above the upper surface of the seat when in use while operating the machine.
- 2) The statement in the description page 2, lines 27-31, should not give the impression that the effective axis of the rocking motion is not above the seat surface. (Article 6 PCT)

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/GB 00/ 00774	International filing date (day/month/year) 03/03/2000	(Earliest) Priority Date (day/month/year) 03/03/1999
Applicant COX, Brian, Anthony		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 2 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of Invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☐ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

5

☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/IB 00/00774

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 B62J1/08 B62J1/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B62J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	FR 2 729 631 A (DA FONTE P.) 26 July 1996 (1996-07-26) the whole document ----	1
A	DE 99 557 C (GULDEN) the whole document ----	1
A	WO 97 32774 A (FLORES) 12 September 1997 (1997-09-12) abstract -----	1

☐ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

16 June 2000

Date of mailing of the international search report

26/06/2000

Name and mailing address of the ISA

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Authorized officer

Denicolai, G

INTERNATIONAL SEARCH REPORT

Information on patent family members

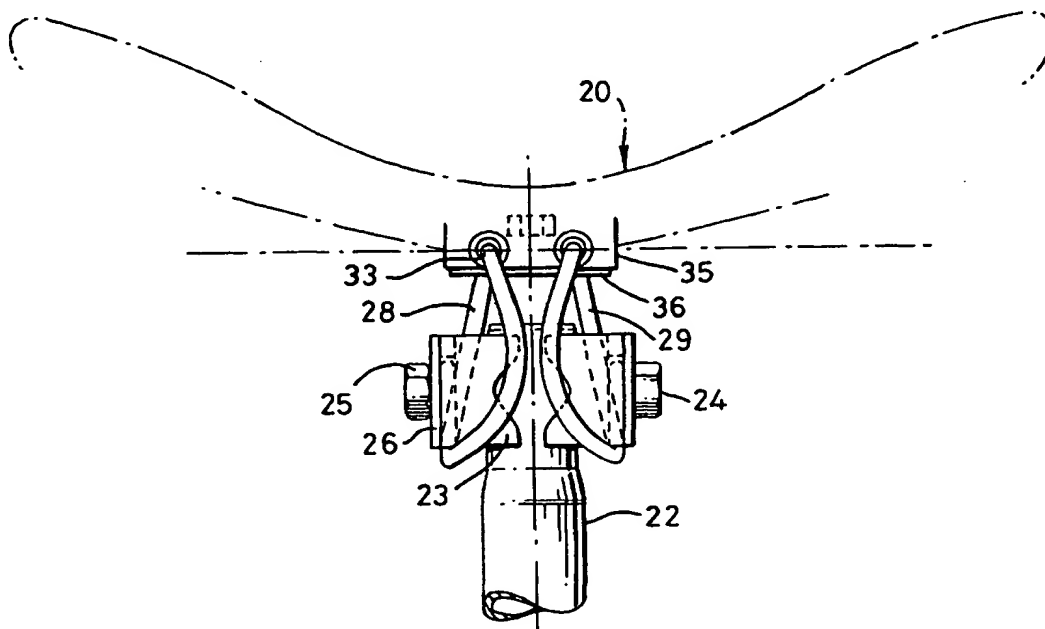
International Application No

PCT/IB 00/00774

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
FR 2729631	A	26-07-1996	NONE		
DE 99557	C		NONE		
WO 9732774	A	12-09-1997	FR	2745781 A	12-09-1997
			AU	1931597 A	22-09-1997

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ : B62J 1/08, 1/00	A1	(11) International Publication Number: WO 00/51877 (43) International Publication Date: 8 September 2000 (08.09.00)
(21) International Application Number: PCT/GB00/00774 (22) International Filing Date: 3 March 2000 (03.03.00) (30) Priority Data: 9904728.4 3 March 1999 (03.03.99) GB (71)(72) Applicant and Inventor: COX, Brian, Anthony [GB/GB]; The White House, Yarmouth Road, North Walsham, Norfolk NR28 9AT (GB). (74) Agents: GILLAM, Francis, Cyril et al.; Sanderson & Co., 34 East Stockwell Street, Colchester, Essex CO1 1ST (GB).		(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>

(54) Title: SADDLES FOR PEDAL-OPERATED MACHINES**(57) Abstract**

A saddle (20) for a bicycle, tricycle, exercise cycle or the like has a mounting arrangement (23, 28 and 29) which permits the saddle (20) to rock from side to side as a rider pedals the cycle. The rocking motion has an effective centre above the surface of the saddle and the saddle is resiliently biased so as to return to its central position when the cycle is not being ridden.

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

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SADDLES FOR PEDAL-OPERATED MACHINES

This invention relates to a saddle for a pedal-operated machine, and in particular - but not exclusively - to a saddle for a bicycle, tricycle, exercise bicycle or the like.

5 The saddle of this invention is primarily intended for use with a bicycle, which will hereinafter be referred to simply as a "cycle". Though the invention will hereinafter be described exclusively with reference to cycles, it is to be understood that the saddle is suitable for use on a wide variety of pedal-operated machines including those mentioned above and the term "cycle" is
10 not to be understood as limiting the invention to bicycles.

 The function of a cycle saddle is to support the greater part of the rider's weight and at the same time to restrain the rider's seat slipping off the saddle while leaving his or her legs free to rotate the pedals. A conventional cycle saddle has a rearward, relatively broad platform on which the inner part of the
15 buttocks of a rider may rest, the platform merging into a single forwardly-projecting relatively narrow saddle horn. The primary function of the horn is to prevent the rider slipping off the saddle but in practice much of the rider's weight may be carried by the horn. Unfortunately, a rider may suffer physical problems or other medical consequences from prolonged or excessive cycling
20 on a conventional saddle of this kind, due to the pressure exerted by the horn on the rider's crotch.

 There have been proposals for hornless saddles for cycles, which aim at minimising the likelihood of problems which may arise consequent upon extensive use of a horned saddle. There have moreover been proposals for
25 saddles which may move, or have relatively moveable parts, aimed at making the riding of a cycle more comfortable, or less tiring. However, all of these saddles suffer from various disadvantages including quite often a feeling of insecurity for the rider.

 It is a principal aim of the present invention to provide a cycle saddle
30 which is able to support the buttocks of a rider in a particularly comfortable and effective manner, and which does not restrict the free movement of the legs to rotate the pedals of the cycle.

According to the present invention, there is provided a saddle for a pedal-operated machine, which saddle has a seat portion having an upper surface for supporting the buttocks of a user and a mounting arrangement for the seat portion which mounting arrangement permits the seat portion to perform a lateral rocking motion the effective axis of which is disposed above the upper surface of the seat portion.

When a rider is pedalling a cycle, his hips perform a kind of rolling action with the pelvis rocking from side to side. The saddle of the present invention allows that pelvic action to occur in a natural and unrestricted way, assisting the application of the maximum driving force to the down-going pedal of the cycle. This is because the saddle may rock in such a way that the side of the saddle on the same side of the cycle as the down-going pedal moves downwardly with respect to the other side of the saddle, so not restricting the movement of the leg on the down-going pedal. The opposite side of the saddle rises slightly so better accommodating the weight of the rider on that buttock on that side of the saddle. Then, as the pedals rotate and the other pedal starts its down-going travel, the saddle may rock in the other sense, so freeing for easy movement the leg driving that other pedal.

In one embodiment, the saddle is mounted for movement laterally of a cycle and when performing that lateral movement, the saddle simultaneously undergoes a rotational motion about a centre of curvature above the upper surface of the saddle. In an alternative embodiment, the saddle is supported in such a way that it performs a pivoting action having a centre of curvature above the upper surface of the saddle. In this case, though the saddle may move laterally to a small extent, the primary motion is one of pivoting about the centre of curvature above the upper surface.

Though the rocking motion has been described as having an effective axis above the upper surface of the saddle, the rocking motion could be a complex rocking motion and not a simple part-circular motion having a fixed centre of curvature. Thus, the effective centre of curvature for the rocking motion when of a complex form may itself be a locus, of arcuate shape.

The mounting arrangement advantageously includes a mounting means such as a bracket to permit the attachment of the saddle to a cycle - which

typically might be a bicycle or tricycle. Such a mounting means may be essentially conventional and so comprise a clamp adapted for tightening around a pillar generally-upwardly extending from a cycle frame.

In the first-mentioned embodiment, the mounting arrangement has a
5 track of generally arcuate form and which defines a path of movement for the seat portion of the saddle. Such a track may be in the form of an arc of a circle - that is, having a fixed radius - with the centre of the arc disposed above the upper surface of the saddle and extending essentially along the plane containing the frame of the cycle. Though that axis preferably is substantially
10 horizontal, it may extend at a small angle to the horizontal, in order to give the most effective support for a rider.

The track may be in the form of a rail mounted on the bracket of the mounting means, the seat portion having at least two rollers which run on the rail. Alternatively, the track could be provided on the underside of the seat
15 portion which track runs along suitable rollers provided on the bracket of the mounting means. In either case, the arrangement of the track and rollers allows the saddle to move laterally of the cycle to which it is attached, following the arcuate path defined by the rail and having an effective centre of curvature above the upper surface of the seat portion. In a preferred arrangement, the
20 rail has an upper surface and the rollers run along that upper surface. The rail may be of T-shaped cross-section with at least two further rollers arranged to run on the undersides of the rail, opposed to said at least two rollers, one to each side of the central web of the T-shaped rail. In this way, the seat portion may securely be located by the mounting means so as to be free for motion
25 along the length of the rail but restrained against movement in all other directions.

In the alternative, the track may define a channel-shaped groove and there are at least two rollers which run in the groove. Fully to locate the seat portion, there may be two channel-shaped grooves spaced apart in a direction
30 parallel to the axis of rocking movement of the seat portion, and rollers which run in each of the grooves. For such an arrangement, it is preferred for the openings to the two grooves to face each other so as to minimise the likelihood of the ingress of foreign matter, the trapping of fingers or the like.

The movement of the seat portion may be damped, for example by providing blocks of resiliently compressible material which tend to restrain the seat portion in its central position and movement away therefrom compresses one or another block. An alternative arrangement would be to provide springs suitably arranged between the seat portion and the bracket of the mounting means.

In an alternative embodiment of the mounting arrangement, there are two links each connected at their upper ends to the saddle portion and at their lower ends to the mounting bracket, whereby the rocking motion is defined by the combined action of the two links. Thus, there is defined a kind of four-bar linkage with the links forming two opposed sides of that linkage and which permits the saddle to perform a pivoting action though with some lateral translation. The links may be resiliently deformable, the lower ends thereof then being clamped to the mounting bracket, whereby the links are resiliently deformed along their lengths, to permit the saddle to perform its rocking motion. This has the advantage that the saddle will be centred with respect to a cycle to which it is secured, when the saddle is not in use by a rider.

The radius of curvature of the rocking movement of the seat portion should be selected having regard to the intended use of the machine. For example, in a case of a cycle intended for use by an adult, it is anticipated that the radius of curvature may be of the order of 200mm. For other intended uses, such as a cycle for a child, a different radius might be appropriate though it is envisaged that the radius of curvature should lie in the range of about 175-250mm.

This invention extends to a cycle whenever provided with a saddle of this invention as described above.

By way of example only, two specific embodiments of saddle of this invention will be described in detail, reference being made to the accompanying drawings, in which:-

Figure 1 is an end view on the important parts of the first embodiment of saddle;

Figures 2 and 3 are part-sections taken on lines II-II and III-III marked on Figure 1;

Figure 4 is a side view on the second embodiment of saddle;

Figure 5 is an end view on the saddle of Figure 4;

Figure 6 is a plan view on the mounting arrangement for the second embodiment, but with the saddle removed for clarity and shown in long chain
5 lines;

Figure 7 is a general perspective view of the saddle assembly of Figures 4 to 6;

Figure 8 shows the components of the second embodiment, in an exploded view;

10 Figures 9A and 9B show the saddle of Figures 4 to 8 respectively in a central position and moved laterally, to undertake a rocking action; and

Figure 10 illustrates the locus of movement of the saddle.

The saddle of this invention includes a mounting bracket 10 furnished with an adjustable clamp shown in Figures 1 and 2 and which is adapted for
15 attachment to the upper end of a saddle pillar of a cycle. Such a clamp forms no part of this invention and is well-known in the art; it will not therefore be described in further detail here. The bracket 10 carries a transversely extending rail 11 of T-shaped cross-section, with the web 12 of the rail extending generally vertically. The rail is of arcuate form, as shown in Figure 1,
20 though the radius of curvature has been exaggerated in that drawing and typically should be approximately 200mm. The centre of that curvature is thus positioned approximately 200mm above the centre of the mounting bracket 10.

The saddle has a seat portion which is shown only in outline in the drawings but which is appropriately configured to support the buttocks of a rider
25 of the cycle. Typically therefore the seat portion may be a padded platform which is secured to the upper surface 13 of a carriage 14 which is supported on the rail 11 so as to be able to run from side to side along the length of the rail. The carriage 14 has three rollers 15 which run on the upper surface 16 of the rail 11 and lower rollers 17 which run along the undersides of the flange 18 of
30 the rail 11.

The carriage 14 is generally of box-shaped cross-section but with a slot 19 in its lower face to accommodate the web 12 of the rail 11. Each roller 15 is supported on a pin extending between the side walls of the carriage and each

roller 17 is supported on a cantilevered pin extending inwardly from the respective side wall of the carriage.

In use, the clamp of the mounting bracket 10 is secured to the pillar of a cycle so that the web 12 of the rail extends generally in a vertical plane, transverse to the median plane of a cycle with which the saddle is used. Thus, the axis of the centre of curvature of the rail 11 will extend substantially horizontally, in that median plane of the cycle, so that the carriage 14 may rock from side to side with the rollers 15,17 running on the rail 11. As the carriage 14 is substantially closed, and may further be provided with end caps (not shown) closely to fit around the rail, the ingress of dirt or other foreign matter is minimised, as is the entrapment of fingers (for example) should the saddle move laterally other than when the cycle is being powered by a rider.

The saddle will rock from side to side as pedalling of the cycle is undertaken. The leg driving a down-going pedal will tend to depress that side of the saddle, so causing the saddle to rock to the other side of the cycle median plane and thus better to support the other buttock. Then, as the other pedal reaches top dead centre and becomes the down-going pedal, the saddle will run across the median plane of the cycle and allow the leg driving that pedal freely to move and so impart the maximum force to that pedal. Though not shown in this embodiment, springs may be disposed between the mounting bracket 10 and the carriage 14, so as to urge the carriage generally towards the central position shown in Figure 1, movement away from that central position being against the action of the spring force.

Referring now to Figures 4 to 10, there is shown a second embodiment of saddle of this invention and which has a similar action to that described above, but achieved in a different way. The saddle has a seat portion 20 shown in outline only in Figures 4 to 6 but shown in more detail in Figures 7 to 9. The seat portion 20 is essentially hornless but nevertheless has a small forwardly projecting portion 21, to assist location of a user on the saddle. To increase comfort, the saddle may be made of a slightly resilient material, or may be covered in such a material, in a manner known in the art.

A mounting arrangement is provided to secure the seat portion 20 to the upper end of a saddle pillar 22, which is of entirely conventional form and

normally comprises a part of a cycle on which the saddle is mounted. The mounting arrangement includes a pillar clamp 23 of U-shaped form and again of a generally conventional shape, and through which extends a clamp bolt 24 provided with a nut 25. Also disposed on the bolt 24 are two pairs of clamp washers 26 and 27, respective mounting rods 28 and 29 being clamped between those pairs of washers 27.

Each mounting rod 28,29 has a U-shaped lower portion 30 in which is received the clamp bolt 24 and upwardly projecting side portions 31 having the end regions 32 turned over to face one another. Though the rearward side portions 31 are essentially linear, the forward side portions are both inwardly curved, towards one another, as best seen in Figures 5 and 8.

Disposed on each end region 32 is a respective bush 33, received in a recess 34 provided in a mounting block 35 secured to the underside of the seat portion 20. The bushes 33 are retained in the recess by a plate 36, secured in position by two bolts 37 passing through the plate into threaded holes in the block 35.

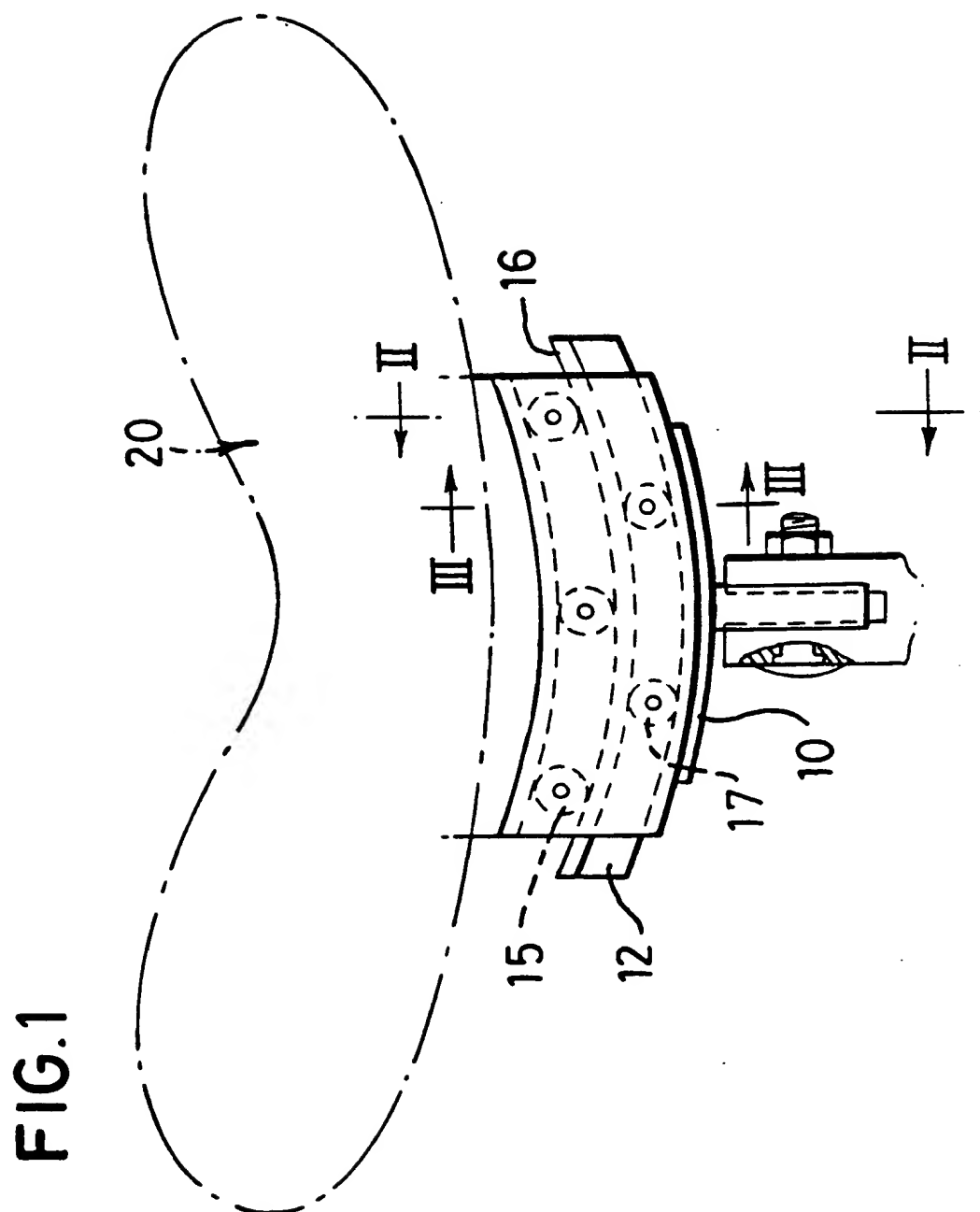
When fully assembled, the above-described mounting arrangement maintains the saddle centrally of the median plane of a cycle, as shown in Figures 5 and 9A. On riding a cycle fitted with the saddle, the leg driving the down-going pedal, will tend to depress that side of the saddle, so causing the saddle to rock, as shown in Figure 9B, relieving pressure from the down-going leg and allowing the pelvis to move. This rocking action is performed by the rods 28 and 29 deforming resiliently to some extent, until an equilibrium position is reached. As the down-going pedal reaches bottom dead centre and the other pedal top dead centre, a rider starts to press down on the other pedal and this allows the saddle to rock in the opposite sense, relieving pressure from the down-going leg. This rocking action is diagrammatically illustrated in Figure 10, which shows the locus of the end regions 32 of the rods 28 and 29. On a rider dismounting the cycle, the saddle will return to its central position as shown in Figure 9A.

CLAIMS

1. A saddle for a pedal-operated machine, which saddle has a seat portion having an upper surface for supporting the buttocks of a user and a mounting arrangement for the seat portion which mounting arrangement permits the seat
5 portion to perform a lateral rocking motion the effective axis of which is disposed above the upper surface of the seat portion.
2. A saddle as claimed in claim 1, wherein the effective axis of rocking motion of the seat portion extends substantially horizontally.
3. A saddle as claimed in claim 1 or claim 2, wherein the mounting
10 arrangement includes a mounting bracket to permit the mounting of the saddle on the machine.
4. A saddle as claimed in claim 3, wherein the mounting arrangement includes a track of generally of arcuate form and which defines a curved path along which the seat portion may in use move.
- 15 5. A saddle as claimed in claim 4, wherein the track is of part-circular form, centred on an axis disposed above the upper surface of the seat portion.
6. A saddle as claimed in claim 4 or claim 5, wherein the track is in the form of a rail mounted on one of the seat portion and the bracket, and the other of the seat portion and the bracket has at least two rollers which run on the rail.
- 20 7. A saddle as claimed in claim 6, wherein the rail has an upper surface and said at least two rollers run on the rail upper surface.
8. A saddle as claimed in claim 7, wherein the rail is of T-shaped section with a flange projecting laterally from a central web and there are at least two further rollers disposed one to each side of the central web of the rail and
25 arranged to run on the undersides of the flange, in opposition to said at least two rollers.
9. A saddle as claimed in claim 4 or claim 5, wherein the track defines a channel-shaped groove and there are at least two rollers which run in the groove.
- 30 10. A saddle as claimed in claim 9, wherein there are two channel-shaped grooves spaced apart in a direction parallel to the axis of rocking movement of the seat portion, and there are rollers which run in both of the grooves.

11. A saddle as claimed in any of claims 4 to 10, wherein the bracket is connected to the track and the seat portion is provided with said rollers which run on the track.
12. A saddle as claimed in claim 3, wherein the mounting arrangement
5 includes two links each connected at their upper ends to the saddle portion and at their lower ends to the mounting bracket, whereby the rocking motion is defined by the combined action of the links.
13. A saddle as claimed in claim 12, wherein the links are resiliently deformable and lower ends thereof are clamped to the mounting bracket,
10 whereby the links are resiliently deformed as the saddle performs its rocking motion.
14. A saddle as claimed in any of the preceding claims, wherein the seat portion is resiliently biased to a central position and moves against that bias when performing a rocking motion.
- 15 15 A saddle as claimed in any of the preceding claims, wherein the radius of curvature of the rocking movement of the seat portion lies in the range of 175 to 250mm.
16. A pedal-operated machine whenever provided with a saddle as claimed in any of the preceding claims.

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FIG.2

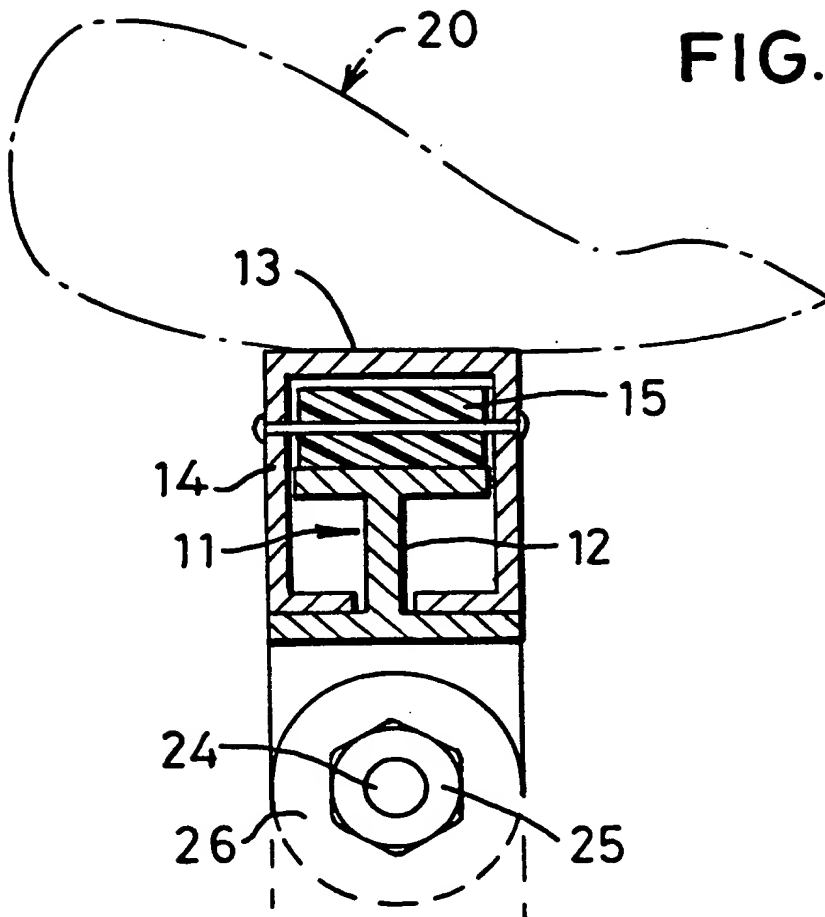
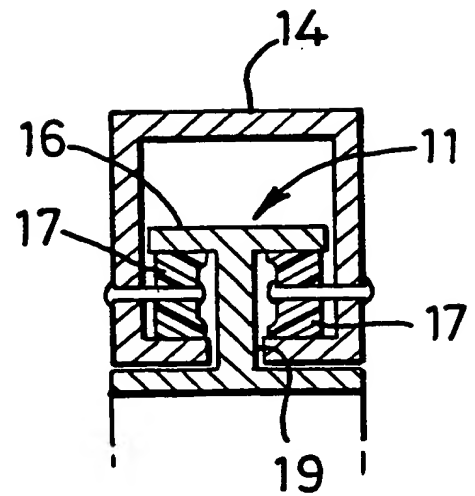
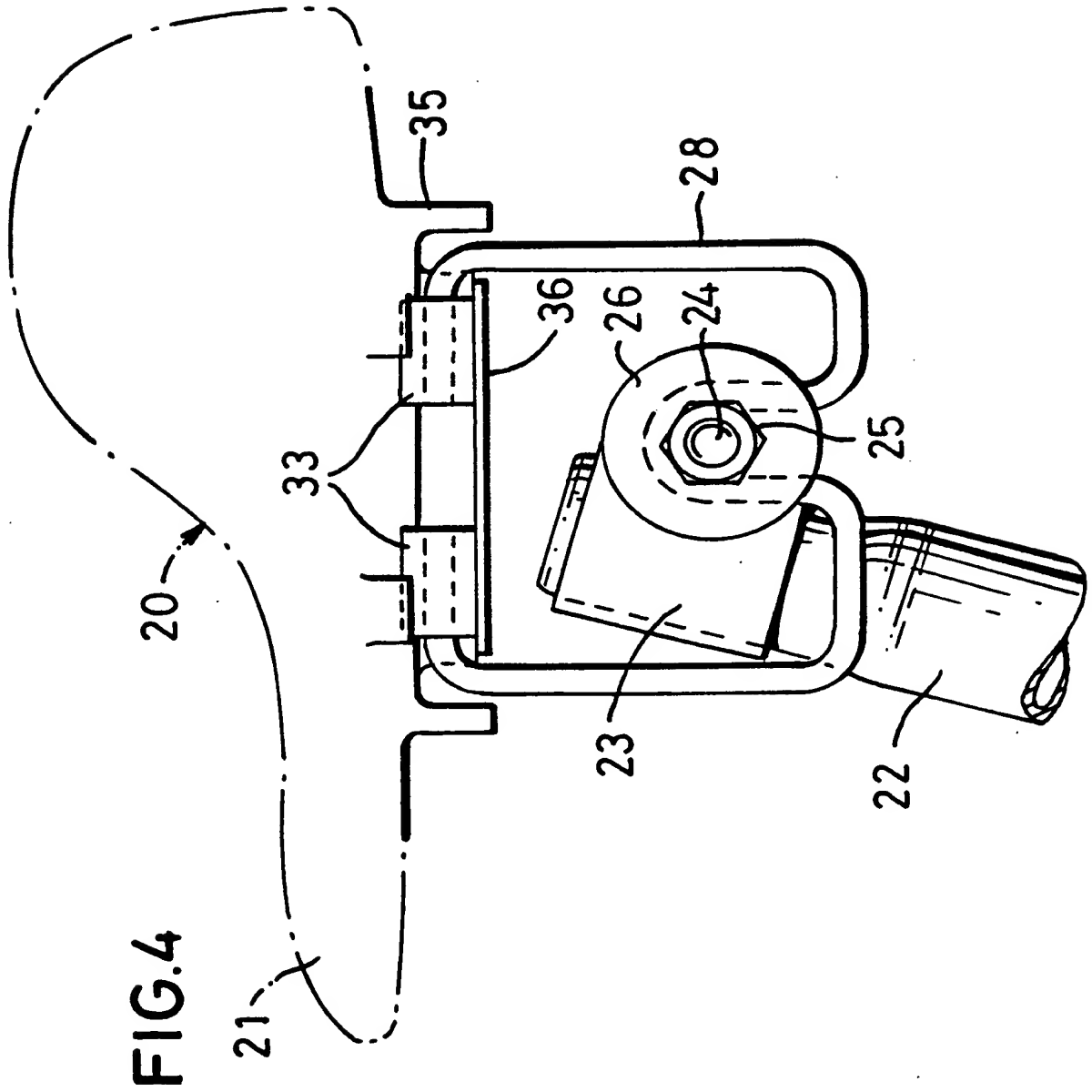


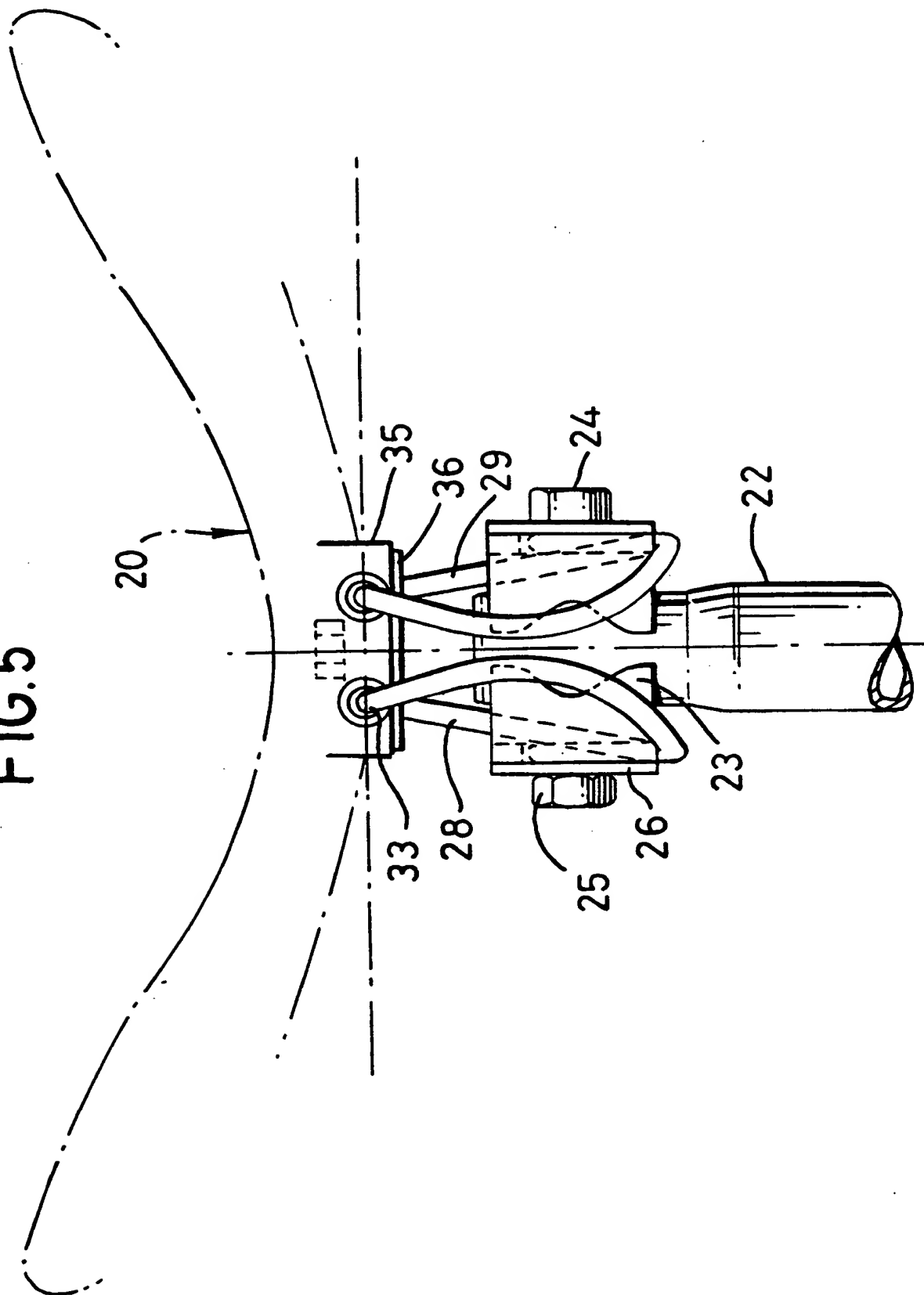
FIG.3





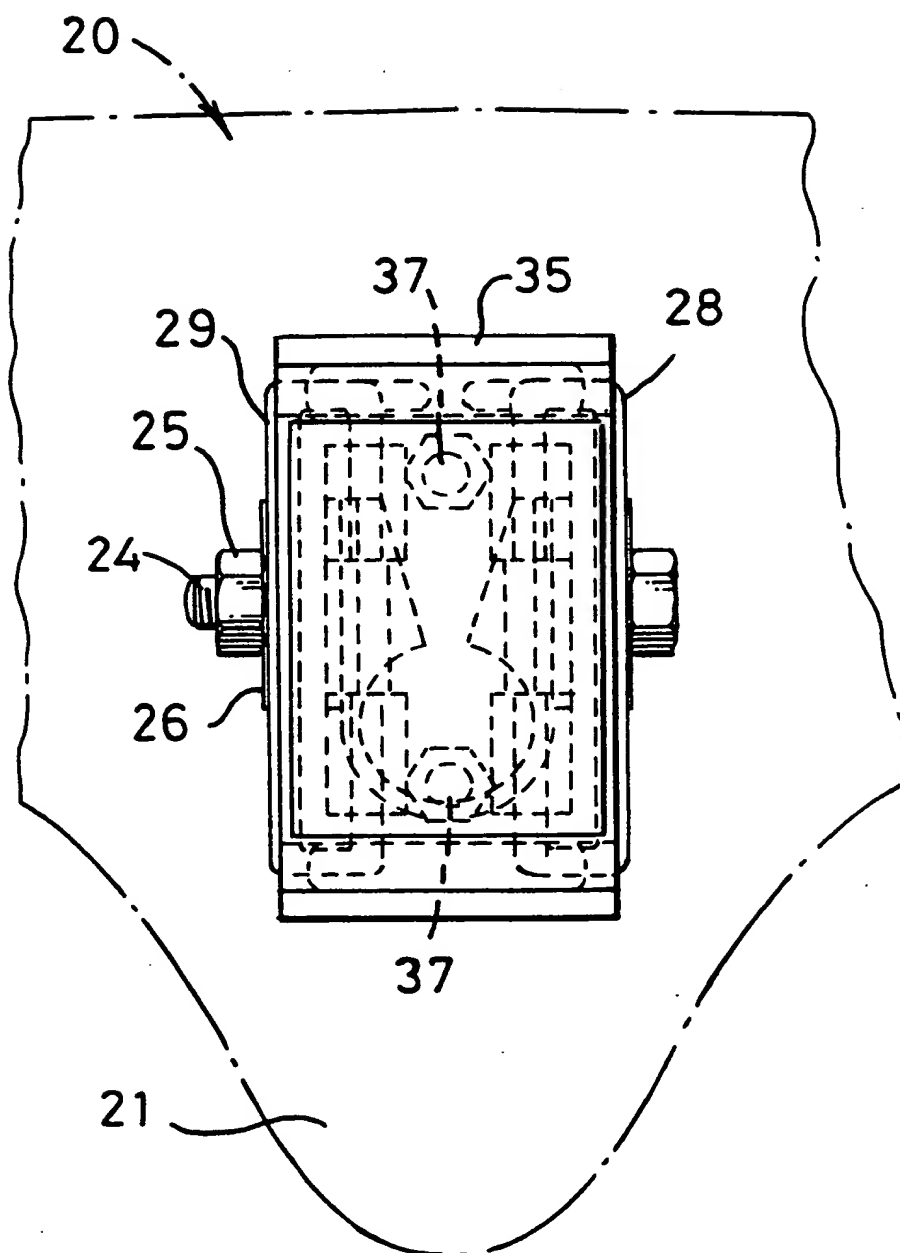
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FIG.5

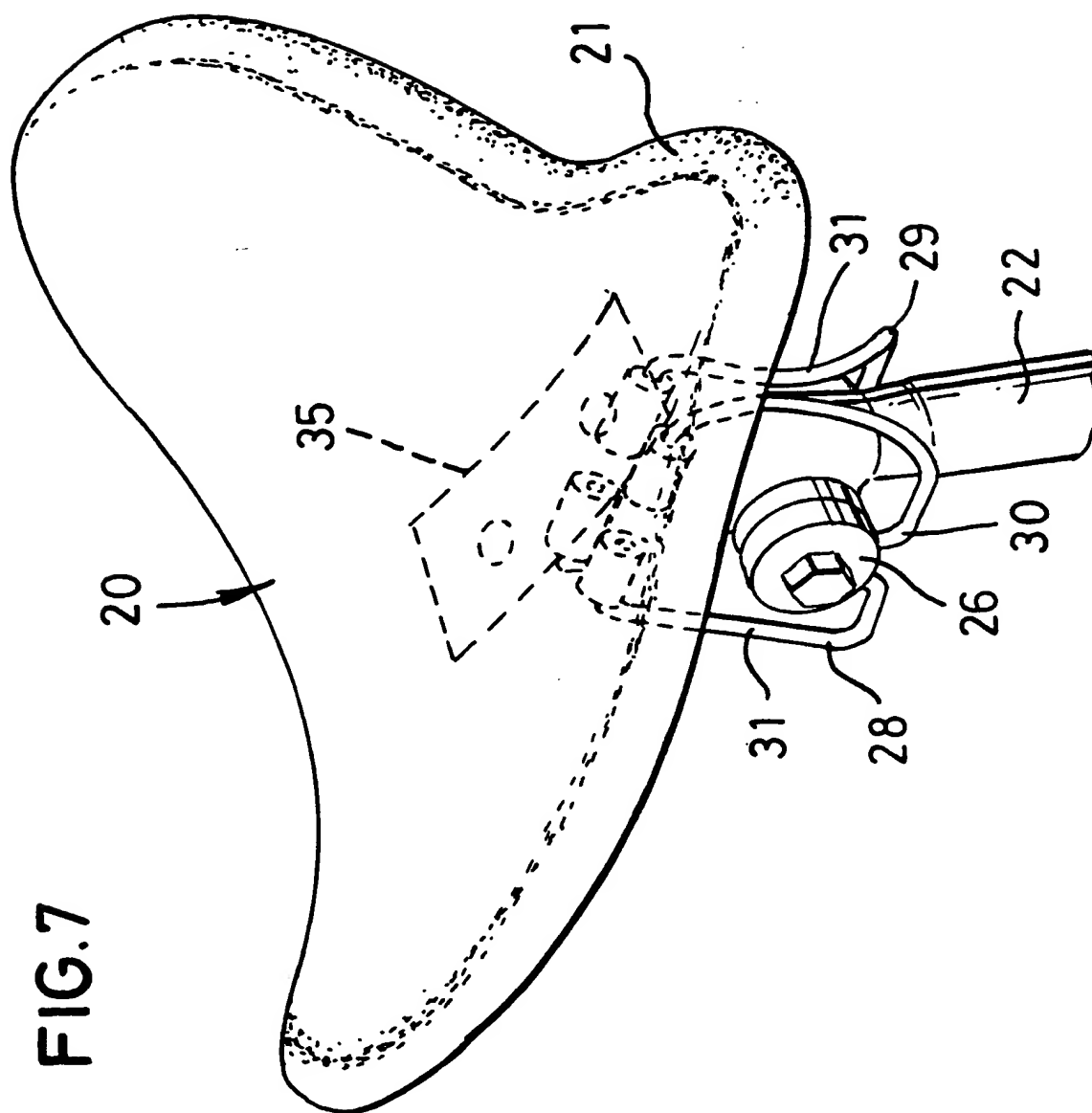


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FIG.6



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FIG.9B

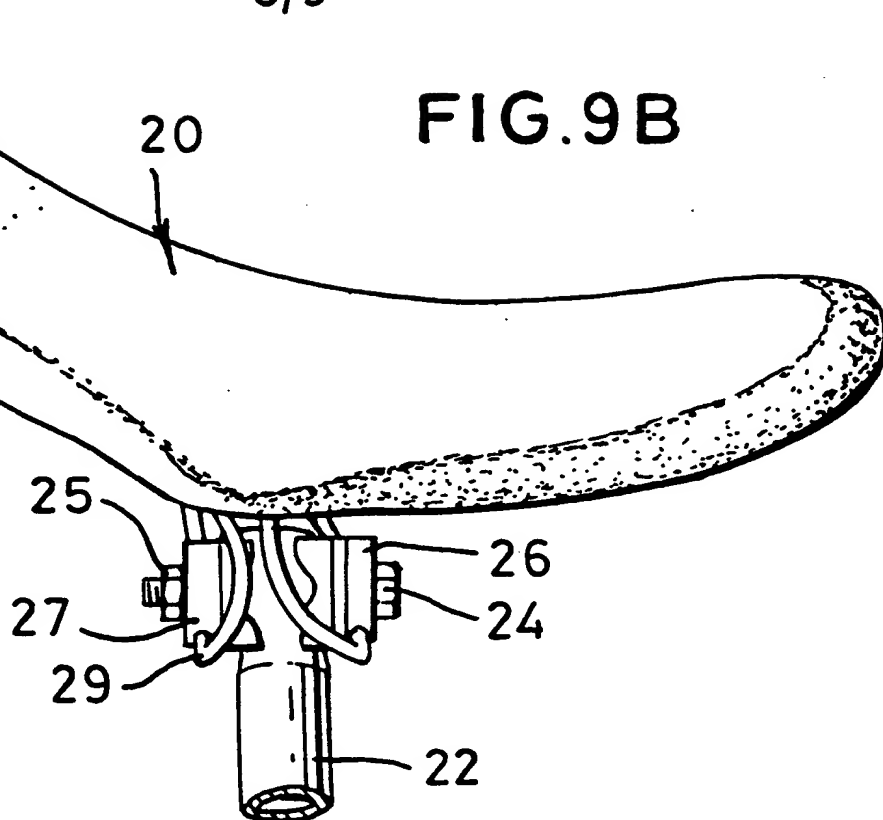


FIG.9A

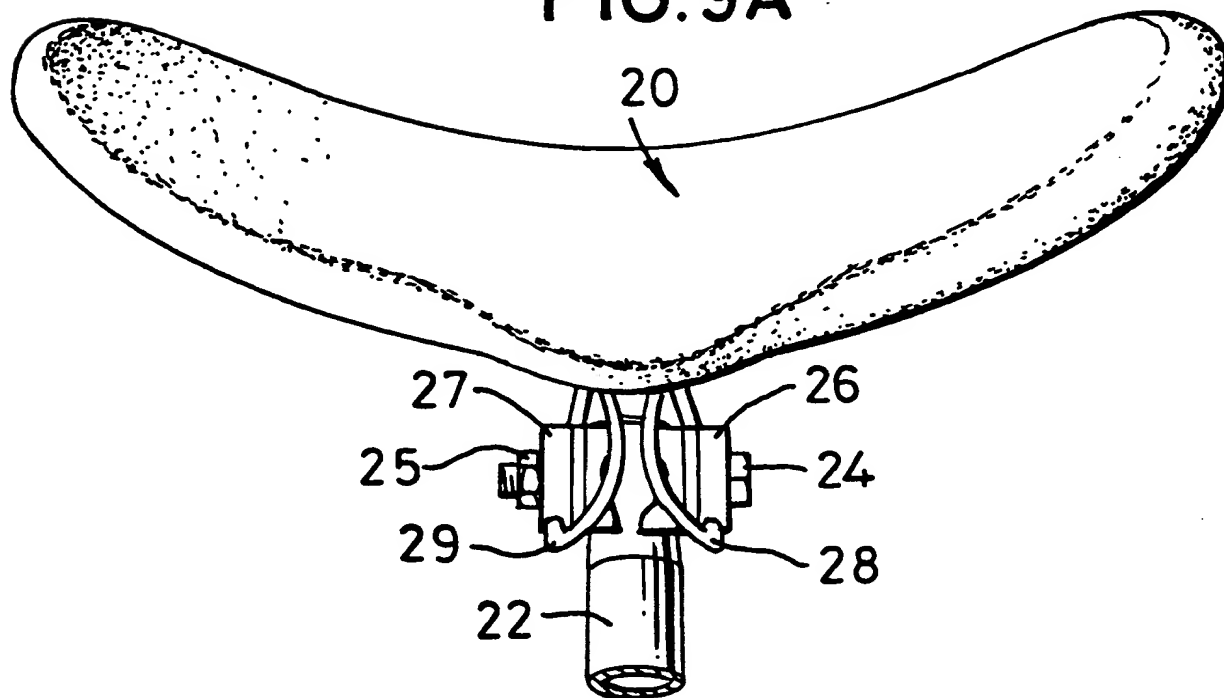
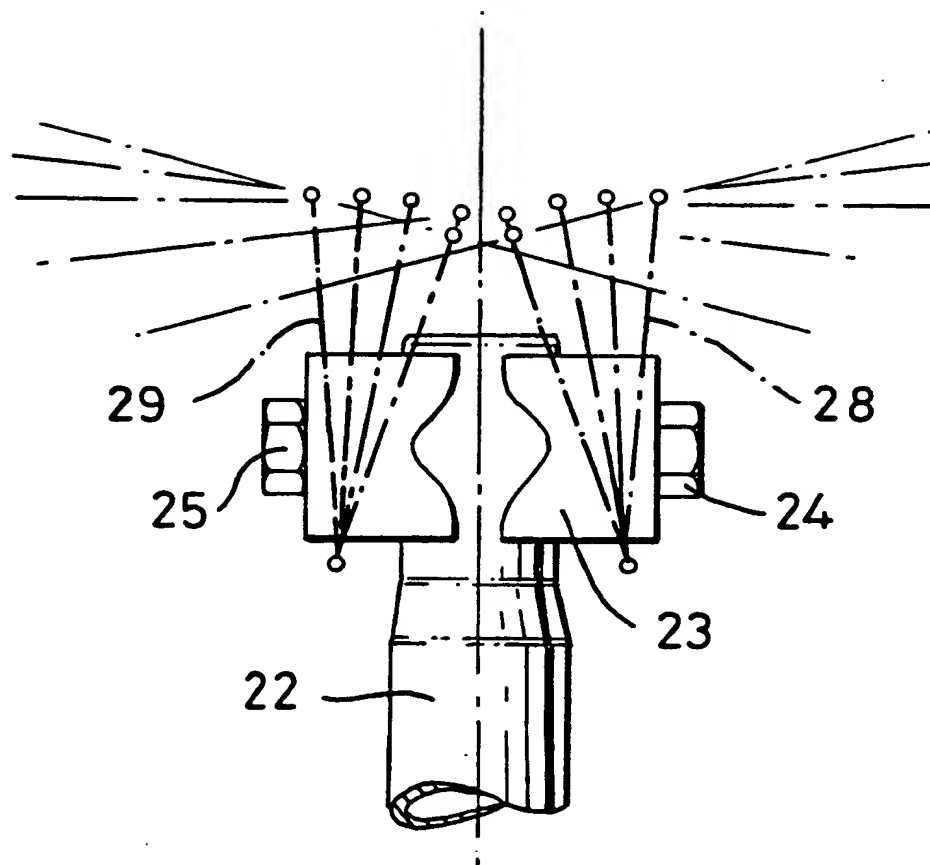


FIG.10



INTERNATIONAL SEARCH REPORT

In. tional Application No

PCT/GB 00/00774

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 B62J1/08 B62J1/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B62J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	FR 2 729 631 A (DA FONTE P.) 26 July 1996 (1996-07-26) the whole document ----	1
A	DE 99 557 C (GULDEN) the whole document ---	1
A	WO 97 32774 A (FLORES) 12 September 1997 (1997-09-12) abstract -----	1

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

16 June 2000

Date of mailing of the international search report

26/06/2000

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Denicolai, G

INTERNATIONAL SEARCH REPORT

Information on patent family members

In International Application No

PCT/GB 00/00774

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
FR 2729631	A	26-07-1996	NONE		
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WO 9732774	A	12-09-1997	FR 2745781	A	12-09-1997
			AU 1931597	A	22-09-1997